CLAIMS

What is claimed is:

1. A method of processing an organic memory device, comprising:

forming an electrode on a substrate;

forming an organic semiconductor layer, comprising an organic polymer, over the electrode;

depositing a silicon-based resist layer over the organic semiconductor layer;

patterning the silicon-based resist layer, and

using the patterned silicon-based resist layer as a mask, patterning the organic semiconductor layer.

2. The method of claim 1, further comprising depositing a passive material over the electrode.

3. The method of claim 1, wherein the silicon-based resist layer is deposited by spin-on techniques.

4. The method of claim 1, wherein patterning the organic semiconductor layer comprises contacting an oxygen plasma with the organic semiconductor layer.

5. The method of claim 1, wherein the silicon-based resist layer is patterned using an organic solvent or a hydroxide solution.

6. The method of claim 1, further comprising forming a second electrode over the patterned organic semiconductor layer to form an organic memory cell.

7. The method of claim 1, wherein the silicon-based resist layer comprises one of a polysiloxane and a silsesquioxane.

8. The method of claim 1, wherein pattering the silicon-based resist layer comprises irradiating the silicon-based resist layer with light having a wavelength of about 248 nanometers or less.

9. The method of claim 1, wherein the organic polymer comprises at least one of polyacetylene, polyphenylacetylene, polydiphenylacetylene, polyaniline, poly(p-phenylene vinylene), polythiophene, polyporphyrins, porphyrinic macrocycles, thiol derivatized polyporphyrins, polymetallocenes, polyferrocenes, polyphthalocyanines, polyvinylenes, and polypyrroles.

10. The method of claim 2, wherein the passive material comprises copper sulfide.

11. The method of claim 1, further comprising forming a partitioning component on the substrate.

12. The method of claim 11, the partitioning component comprises at least one of a diode, a thin-filmed diode (TFD), a zener diode, an LED, a transistor, a thin-filmed transistor (TFT), a Silicon Controlled Rectifier (SCR), Uni Junction Transistor (UJT), and a Field Effect Transistor (FET).

13. The method of claim 1, the method comprising using at least one of a single and dual damascene process.

14. A system to produce an organic memory device, comprising:

means for forming an organic semiconductor layer over an electrode;

means for applying a silicon-based resist layer over the organic semiconductor layer;

means for patterning the silicon-based resist layer, and

means for patterning the organic semiconductor layer.

15. The system of claim 14, further comprising depositing a passive material over the electrode, wherein the passive material comprises copper sulfide.

16. The system of claim 14, wherein the silicon-based resist layer comprises one of a polysiloxane and a silsesquioxane.

17. The method of claim 14, wherein patterning the silicon-based resist layer comprises irradiating the silicon-based resist layer with light having a wavelength of about 248 nanometers or less.

18. The method of claim 14, further comprising forming a second electrode over the patterned organic semiconductor layer to form an organic memory cell.

19. The method of claim 14, wherein patterning the organic semiconductor layer comprises contacting an oxygen plasma with the organic semiconductor layer.

20. A method of forming an organic memory device, comprising:

forming a first electrode using a damascene process;

forming a passive material over the first electrode;

forming an organic semiconductor material on the passive material;

forming a silicon-based resist layer over the organic semiconductor material;

developing the silicon-based resist layer to expose a portion of the organic semiconductor material;

etching the exposed portion of the organic semiconductor material, and

forming a second electrode over the organic semiconductor material to operatively couple the first electrode and the second electrode.